

SPLIT-2

Work Order ID 143414-2

143414

Page 1

Tuesday, March 15, 2016 11:46:31 AM

Item ID: D6104-011 Accept *N900040100* Setup Start *NS1*
 Revision ID: Stop *NS2*
 Item Name: 17-4 SS Roundbar 6.50"OD
 Start Date: 3/21/2016 Start Qty: 10.00 *10* Cust Item ID:
 Required Date: 4/15/2016 Req'd Qty: 10.00 *10* Customer:
 Reference:

Approvals: Process Plan: MLJ Date: MAR 15 2016 Tooling: _____ Date: _____ Run Start *NR1*
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D6104	Rev B								
100	PURCHASING	0.00							DAS 13 9-89
100	Memo	0.00							
Purchasing	Issue P/O: <u>31708</u> a)Description: S.S round billet b) Ø6.50" x								
Purchasing	4.100" long) Tolerance on all dimensions are +0.030"/-0.000"d) Material:								
	17-4PH Stainless steele) Min UTS = 170 KSI (38 HRc) Material								
	certification required								
110	Receive & Inspect for Damage & Mat'l Certs	0.00							
110	Memo	0.00							
Packaging	Ensure material certification is attached								
Packaging									
120	QC6- Inspect dimensions to drawing	0.00							
120	Memo	0.00							
QC	Ensure Material certification comply to Dwg D6104								
Quality Control									

10 MAR 15 2016
 X 1 pcs to be replace &
 no charge

APR 13 2016
 DAS 13 9-89

10x 8016-B-2

1+9 1

DAS 14 9-89 16/04/16

DAS 14 9-89 16/04/13

PTO

recy 1x 8016-B-15



DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: <u>143414</u> Part No. <u>D6104-011</u> NCR No. _____	DISPOSITION Rework ☐ Scrap ☒ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☒ Engineering ☐ Quality ☐ Other ☐			
Date: <u>16/04/13</u>	Step #: <u>120</u>	QTY Effective: <u>1</u>		MRB (QSI042) Approval DAS 9 9-89 <u>16-04-12</u> Completed By DAS 14 9-89 <u>16/04/13</u> Lead hand / Supervisor Approval Verification DAS 9 9-89 <u>16-04-12</u> QC / QA Coordinator Approval DAS 9 9-89 <u>16-04-12</u>	
Description Work Order Deviation		Disposition			
1 part lenght too short. 4.00" should be 4.100" finish part 4.00" f.c. supplier		Scrap qty 1 identify as tooling			
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☒ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ ☒ Outside Dimensions Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER: _____					

Work Order ID 143414

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 Required Date: 4/15/2016 Req'd Qty: 10.00 ***10*** Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130 *130* Packaging Packaging	Identify as per dwg & Stock Location: <u>MAT043</u> Memo LOCATION: MAT043	0.00 0.00				1 + 9	0		DAS 14 9-09 16/04/13
140 *140* QC Quality Control	QC21- Final Inspection - Work Order Release Memo	0.00 0.02				MCS			DAS 14 9-09 16/04/16 APR 18 2016

APR 18 2016



Picklist Print

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Work Order ID: 143414

143414

Parent Item: D6104-011

D6104-011

Parent Item Name: 17-4 SS Roundbar 6.50"OD

Start Date: 3/21/2016

Required Date: 4/15/2016

Start Qty: 10.00

Required Qty: 10.00

Comments: IPP A02.12.02New Issue KJ/RF

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	-------------	--------------	---------------	----------------	--------

D6104-011P

Purchased

No

110

Each

0.0000

1

10

D6104-011P

17-4 SS Roundbar 6.50"Od

10x Sp/6-03-21

rec'd 11 sp 16-04-15

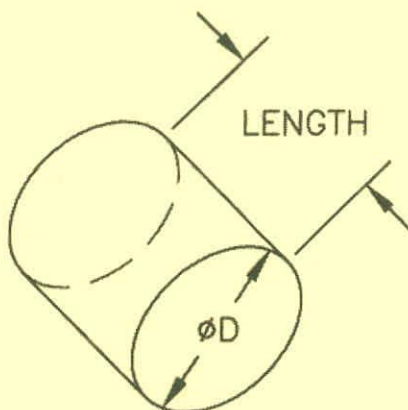




DESIGN <i>RT</i>	DRAWN BY <i>[Signature]</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>[Signature]</i>	APPROVED <i>[Signature]</i>	DRAWING NO. D6104	Rev. B SHEET 1 OF 1
DATE 02.11.25		TITLE ROUND BILLET, 17-4	SCALE NTS
A	01.04.10	NEW ISSUE	
B	02.11.25	CLARIFY ALLOY SPEC ADDED D6104-009/-011 REDUCE LENGTH OF BILLETS	

RELEASED
02.11.29 *[Signature]*

SPECIFICATION CONTROL DRAWING



COPY
TO
ENGINEERING
CONTROL
TO AMT
WITHOUT
WORK ON
143414 M.S
16-03-15

MATERIAL: 17-4 PH SS (AMS 5643 OR AISI 630) MIN UTS = 170 KSI (38 HRc)

PURCHASE MATERIAL ACCORDING TO THE FOLLOWING TABLE. SPECIFY ALLOY, DIAMETER x LENGTH (+0.030/-0.000) AS SHOWN.

TOLERANCE ON ALL DIMENSIONS IS +0.030/-0.000.

ALL DIMENSIONS ARE IN INCHES

Part No.	Alloy	D (Diameter)	Length
D6104-001	17-4 PH STAINLESS STEEL	Ø3.00	3.80
D6104-003	17-4 PH STAINLESS STEEL	Ø3.25	3.80
D6104-005	17-4 PH STAINLESS STEEL	Ø4.00	5.10
D6104-007	17-4 PH STAINLESS STEEL	Ø4.50	5.10
D6104-009	17-4 PH STAINLESS STEEL	Ø5.25	4.10
D6104-011	17-4 PH STAINLESS STEEL	Ø6.50	4.10

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Chantal Lavoie

From: Chantal Lavoie
Sent: Monday, April 11, 2016 1:27 PM
To: 'Desbiens, Marc'
Subject: RE: Message from DartAerospace QualityAssurance C224e

Thank you Marc,
Chantal

From: Desbiens, Marc [mailto:mdesbien@amcastle.com]
Sent: Monday, April 11, 2016 1:24 PM
To: Chantal Lavoie <clavoie@dartaero.com>
Subject: FW: Message from DartAerospace QualityAssurance C224e

Hi Chantal,

We will ship one piece no charge from same heat

Thanks

Marc Desbiens
Inside sales representative
Castle Metals, Montreal, QC
Direct line 514-795-8176
1-800-806-6660 ext 52226
Fax # 1-855-892-6370

Customized Supply Chain Solutions for Your Metal Needs

From: Chantal Lavoie [mailto:clavoie@dartaero.com]
Sent: Friday, April 08, 2016 10:14 AM
To: Desbiens, Marc
Subject: FW: Message from DartAerospace QualityAssurance C224e

Good morning Marc,

Please see attached for packing slip, we have rec'd the 10 pcs but their one pcs that it is all cut on a slant and not able to use. Would it be possible to get replace.

Thanks
Chantal

From: noreply.qa.konicac224@dartaero.com [mailto:noreply.qa.konicac224@dartaero.com]
Sent: Friday, April 08, 2016 11:24 AM
To: Chantal Lavoie <clavoie@dartaero.com>
Subject: Message from DartAerospace QualityAssurance C224e

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Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

OUTSTANDING PO REPRINT

Purchase Order ID PO31708

Purchase Order Date 3/15/2016

PO Print Date 4/13/2016

Page Number 3 of 3

Order From : VU-MET002
METAUX CASTLE
P.O. BOX 4090 STN A
TORONTO, ONTARIO M5W OE9
CANADA

Ship To : DART AEROSPACE LTD
1270
ABERD
EEN
HAWKE
SBURY,
ON
K6A
1K7
CANAD
A

Contact Name
Vendor Phone
Vendor Fax
Ship To Contact
Ship To Phone

Buyer Chantal Lavoie
Customer POID
Customer Tax # 10127-2607
Terms Net 30
Currency USD
FOB Destination-Collect

Ship Method Yours ppd
Ship Acct

Line Nbr	Item ID Vendor Part Number Line Comments Delivery Comments	Description/ Mfg ID	Req Date/ Taxable	Req Qty	Extended Price
9	D6104-011P	17-4 SS Roundbar 6.50"Od	4/18/2016 Yes 4/18/2016	1.00 Each	\$0.00

AS PER DWG D6104 REV. B
B143414
MATERIAL: 17-4 PH SIZE: 6.50" X 4.100" LONG
NOTE: REPLACEMENT BILLET 1 PCS

Sp16-0415

Line Total: \$0.00

Outstanding PO Total: \$1,286.00

CL

Terms & Condition of
Purchasing(Suppliers) and
Procurement Quality Clauses are an
integral part of our AS9100

Change Nbr: 8

Change Date: 4/13/2016



Castle Metals®

A. M. Castle & Co.

PACKING SLIP/
CERTIFICATE OF CONFORMANCE

Page 1 of 1

Shipment No:2942686

Ship From: A. M. CASTLE & CO. 2150 ARGENTIA ROAD MISSISSAUGA, ON L5N 2K7 CAN		Sold To: DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7 CA		Ship To: DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7 CAN		Deliver To: DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7 CA	
Date Shipped 13-APR-16	F.O.B. ORIGIN	Freight Terms Prepaid		Carrier MANITOULIN		BOL No 2942686-2	

Shipment Details	Final Destination Branch - TOR
-------------------------	---------------------------------------

Order No 4319656	Line No 1	Item No 15003.MO	Description 6.5000.RD.17CR-4NI.STAINLESS.RT.SOL TR.COND A.120.0000-168.0000 CUT TO 4.1 IN (+ .1250/-.0000 IN) - BAND SAW CUTTING SPECIFICATIONS: AMS 5643				
Purchase Order No 31708		Part Number YOUR ITEM NUMBER: D6104-011		Ordered Qty 1.00 PCS		Invoice Qty 1.00 PCS	
Details		END USER: DART AEROSPACE END USE: COMMERCIAL AIRCRAFT PARTS					
Delivery No. 120399682	Mill	Heat Number 	Mech Id	PCS 1	Width (IN)	Length (IN)	Shipped Qty(LBS) 40.0453

These commodities/technologies are subject to US Export Administration & US State Dept. Regulations and, if intended for export, were/are exported thereunder. Diversion contrary to US Law is Prohibited.

We hereby certify the material covered by this certification conforms in accordance with the above specifications and has been found to meet the applicable requirements for the material, including any specifications forming a part of the description. Test reports are on file subject to examination. All claims for defective material are waived unless made in writing to A.M. Castle & Co. within 60 days of the shipment. Material cut to the correct size, or material cut by the customer cannot be returned for credit.

Reviewed by Authorized Castle Metals Representative:

Ch

APR 3 2016
Date: 3
Name:



These commodities, technology or software were exported from the United States in accordance with the Export Administration Regulations. Diversion contrary to US law prohibited.

Date Printed: 13-APR-2016 04:56:04 PM



**VALBRUNA**

SLATER STAINLESS, INC.

2400 TAYLOR STREET WEST - PO BOX 630
PORT WAYNE IN 46082 USA
PHONE 260.434.2800 - FAX 260.434.2801**Product Certification Report**Report Number: **5128410**

Certified on Apr 10, 2015 Page 1 of 2

Order I.D. 1500266 001		Order Date 2/04/15		Commodity Code	
Dim 1 6.5000	Dim 2 .0000	Dim 3 .0000	Heat I.D. 266057	Customer I.D. 001809	Customer Purchase Order 27128
Product Shape Rounds			Product Surface HR & Rough Turned		Customer Grade 630
Length (Inches) 120.000 Min. 168.000 Max.			Bill of Lading # 424682	Weight	

Ship ToVALBRUNA CANADA LTD.
8724 HOLGATE CRESCENT
MILTON, ONTARIO L9T5Z1**Sold To**VALBRUNA CANADA LTD.
8724 HOLGATE CRESCENT
MILTON, ONTARIO L9T5Z1DAS
14
9-89

16/04/16

Lifts: 0027

AISI 630

UNS S17400

ASMESA 564 13

Condition A
ASTMA 484-14a
AMS 2303F

3174-02 REV 39

ASTMA 564-13

AMS 5643T (except finish)

CHEMICAL ANALYSIS

C	Mn	P	S	Si	Cr	Ni	Mo	Cu	N	Cb	Ta	Cb+Ta
.041	.49	.025	.025	.41	15.73	4.33	.23	3.37	.03	.30	.000	.299

BRINELL (Type A device used)

HBW

350

TENSILE PROPERTIES ASTM E8-13a**CAPABILITY**

Cap HB	TS (PSI)	.2%YS (PSI)	%EL(4d)	%RA	AGE(F)
422	201000	177900	14.5	52.1	900

MAGNETIC PARTICLE TEST AMS2303

FREQ SEV

AVG .00 .00

MACRO ASTM E340-13/E381-01

MACRO

OK

OK

OK

PERCENT FERRITE (AMS 2315)

% FERRITE Etchant Magnification X

AVG .5 Marbles 100

Reduction ratio 5 To 1 Min.

Electric Furnace melted; AOD refined.

Ultrasonic tested to ASTM A388- Satisfactory.

Chemical testing to one or more of the listed ASTM methods:

E415-14, E1019-11, E1086-14.

Location of tensile fracture: inside middle of gage length.

Chemical Analysis performed at Acciaierie Valbruna, Italy.

No mercury or low melting alloy contamination. No weld repair.

Material melted in Italy, manufactured in the United States.

Results relate only to the items tested. Certification shall not be reproduced except in full, without written approval of Valbruna Stainless Inc. The recording of false, fictitious, or fraudulent statements on this document may be punished as a felony under federal statutes. Including Federal law Title 18, Chapter 47. Consult material safety data sheet (MSDS) for hazard info.

I hereby certify that the reported figures are correct as contained in the records of the corporation.

Manager Laboratory Services

Dennis Hackett

Dennis Hackett

**VALBRUNA**

SLATER STAINLESS, INC.

2400 TAYLOR STREET WEST - PO BOX 630
FORT WAYNE IN 46802 USA
PHONE 260.434.2800 - FAX 260.434.2801**Product Certification Report**Report Number: **5128410**

Certified on Apr 10, 2015 Page 2 of 2

Order I.D. 1500266 001		Order Date 2/04/15		Commodity Code	
Dim 1 6.5000	Dim 2 .0000	Dim 3 .0000	Heat I.D. 266057	Customer I.D. 001809	Customer Purchase Order 27128
Product Shape Rounds			Product Surface HR & Rough Turned		Customer Grade 630
Length (Inches) 120.000 Min. 168.000 Max.			Bill of Lading # 424682	Weight	

**Ship
To**VALBRUNA CANADA LTD.
8724 HOLGATE CRESCENT
MILTON, ONTARIO L9T5Z1**Sold
To**VALBRUNA CANADA LTD.
8724 HOLGATE CRESCENT
MILTON, ONTARIO L9T5Z1

Material conforms to listed specifications and is DFARS compliant.

Quality system is compliant with ISO 9001:2008. Produced in accordance with EN 10204 3.1.



Results relate only to the items tested. Certification shall not be reproduced except in full, without written approval of Valbruna Stainless Inc. The recording of false, fictitious, or fraudulent statements on this document may be punished as a felony under federal statutes. Including Federal law Title 18, Chapter 47. Consult material safety data sheet (MSDS) for hazard info. I hereby certify that the reported figures are correct as contained in the records of the corporation.

Manager Laboratory Services

Dennis Hackett

email: DHackett@valbruna.us

MATERIAL RECEIPT INSPECTION FORM

MATERIAL D6104-911
DATE 16/04/16

PO / BATCH NO 31708/143414

MATERIAL CERT REC'D yes
QUANTITY RECEIVED _____
QUANTITY INSPECTED 1
QUANTITY REJECTED _____

THICKNESS ORDERED 06.50 X 4.100
THICKNESS RECEIVED 06.60 X 4.150
SHEET SIZE ORDERED _____
SHEET SIZE RECEIVED _____

DESCRIPTION	NCR (Check Y/N)		COMMENTS
SURFACE DAMAGE	Y	N	
CORRECT FINISH	Y	N	
CORROSION	Y	N	
CORRECT GRAIN DIRECTION	Y	N	
CORRECT MATERIAL	Y	N	
CORRECT THICKNESS	Y	N	
PHOTO REQUIRED	Y	N	
CORRECT MATERIAL	Y	N	
CORRECT REF # TO LINK CERT	Y	N	
CORRECT MATERIAL IDENTIFICATION	Y	N	
CORRECT M# ON THE MATERIAL	Y	N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y	N	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y	N	

CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK RECORD RESULTS BELOW				
	HRC	HRB	DUR A	DUR D
TYPE OF MATERIAL				
SIZE OF TEST SAMPLE				
HARDNESS / DUROMETER READING				

testers located in the Quality Office

QC 18 INSPECTION		ENGINEERING SIGNOFF (if required)	
INSPECTED BY <u>DAS</u>	SIGNED OFF BY _____		
DATE <u>16/04/16</u>	DATE _____		

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

MATERIAL RECEIPT INSPECTION FORM

INSTRUCTIONS FOR INSPECTING BAR, TUBING, ROUND, & SHEET STOCK

- 1- VERIFY STOCK TO DART PURCHASE ORDER
- 2- MEASURE ALL DIMENSIONS FOR EACH PURCHASED STOCK
 - a. WIDTH, THICKNESS, DIAMETER, WALL THICKNESS & LENGTH
- 3- VERIFY CONDITION OF MATERIAL i.e. DAMAGED, CORRODED, etc
- 4- VERIFY THAT SUPPLIER HAS A NUMBER (HEAT #) ON ITS RECEIVING REPORT TO LINK TO MATERIAL CERTS
- 5- VERIFY MATERIAL CERTS ARE CORRECT TO THE DART PO INSTRUCTIONS
- 6- REMOVE / CUT A PIECE OF MATERIAL FOR SAMPLE HARDNESS TESTING

INSTRUCTIONS FOR INSPECTING SKIDTUBE & STEP EXTRUSION

- 1- VERIFY TO DART SUPPLIED DRAWING
 - 2- SAMPLE INSPECT MATERIAL IN BUNDLE TO ENSURE MATERIAL CAN BE RECEIVED INTO DART
 - 3- USING PORTABLE HARDNESS TESTER VERIFY HARDNESS OF THE MATERIAL TO THE DRAWING
 - 4- VERIFY THAT MATERIAL CERTS MATCH TO WHATS CALLED UP ON THE DART DRAWING
- AFTER MATERIAL PASSES INSPECTION**
- 5- HAVE DART EMPLOYEES START STOCKING MATERIAL BUT REQUEST MIN 20pcs FOR FULL INSPECTION
 - 6- INSPECT ALL DIMS AS PER DRAWING REQUIREMENTS

INSTRUCTIONS FOR INSPECTING CROSS TUBE MATERIAL

- 1- VERIFY MATERIAL CERTS MATCH THE REQUIREMENTS ON THE DART DRAWINGS
- 2- INSPECT MIN. HALF THE BATCH OF EXTRUSION RECEIVED INTO DART
- 3- INSPECT MATERIAL AS PER THE EXTRUSION REPORT
 - a. WALL THICKNESS USING ULTRA-SONIC IN 4 LOCATIONS
 - b. OUTSIDE DIAMETER HIGHEST/LOWEST BOTH ENDS
 - c. INSIDE DIAMETER HIGHEST/LOWEST BOTH ENDS
 - d. STRAIGHTNESS @ CENTER OVER 12" SPAN
 - e. WALL THICKNESS USING TUBE MICROMETER HIGHEST/LOWEST BOTH ENDS
- 4- IDENTIFY EACH TUBE IN SEQUENCE OF INSPECTING (TUBE 1, TUBE 2,) AND W/O# AND PO#
- 5- RECORD ALL FINDINGS ON EXTRUSION REPORT

IF ANY QUESTIONS PLEASE SEE QC COORDINATOR BEFORE GOING FURTHER